#8

Attorney Docket 183-U.S.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Algirdas A. Underys	)	Attention:
		)	
Serial No.:	08/991,113	)	**Primary Examiner Wyszomierski**
		)	
Filing Date:	December 16, 1997	)	
		)	Group 1742
Title:	**Heat Treatment Method and Apparatus**	)	

The Honorable Commissioner
of Patents and Trademarks
Washington, DC 20231

SUPPLEMENTAL DECLARATION

Guy A. Brada states as follows.

9. I provide this Supplemental Declaration after (a) having been shown a copy of the Examiner's June 28, 1999, "Advisory Action" and (b) having had explained to me that it appears that the Examiner as of June 28, 1999, did not agree that the evidence of record (including my Declaration filed June 21, 1999) supported the applicant's position that the application disclosed, as of its filing date, tool steel in the form of "blocks".

10. In further substantiation of the following statement in my Declaration filed June 21, 1999:

> "7. In my opinion viewing the application as a man skilled in the art, the original text of the specification unmistakenly conveys to me the descriptive word "bars" in line 3 and "block" in line 6. Specifically, the application is directed to tool steels, and that term instantly connotes material widely and conventionally understood by all persons in the industry to

mean steel in the forms of bars, rods and blocks."

I refer to (a) "STEEL PRODUCTS MANUAL, TOOL STEELS, Iron and Steel Society, April 1988" page 5 thereof, last paragraph, right column under the heading "1. IN MANUFACTURING PRACTICES AND PRODUCT CLASSIFICATIONS", copy attached, wherein it is stated that:

> "Tool steels are produced in the form of hot and cold finished bars ... forgings, ... hot rolled rod ..." (underlining ours)

and (b), page 7, attached, wherein it is stated:

> "FORGINGS
>
> Forgings commonly are produced in all types of tool steels listed in Table 1 and in many shapes including ... blocks ..." (underlining ours)

11. In further substantiation I refer to the title page of the above mentioned "Tool Steels" publication which I have modified by labeling typical bars, rods and blocks which form the logo for the qualification.

12. Upon this second review I again conclude that "bars" and "blocks" were disclosed in the specification as filed.

Guy A. Brada

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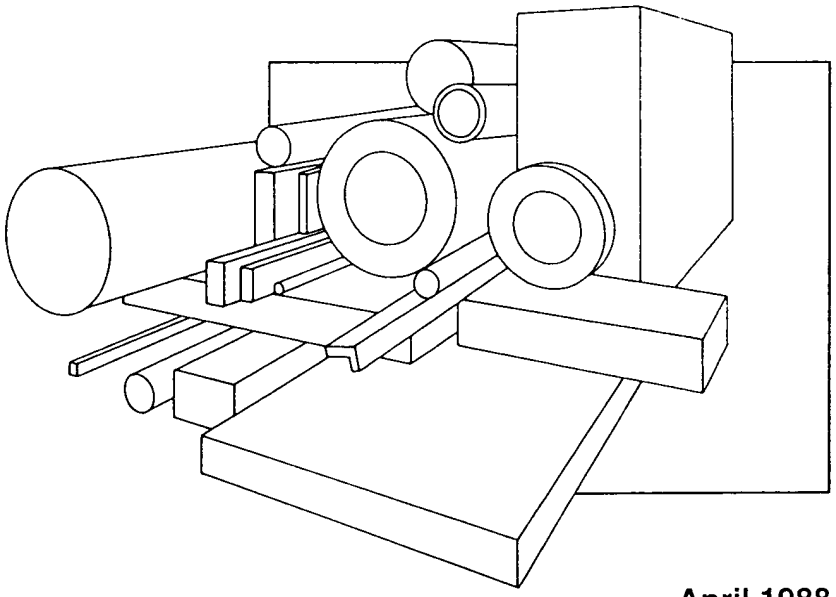
STEEL PRODUCTS MANUAL

Tool Steels



April 1988
A PUBLICATION OF THE IRON & STEEL SOCIETY

EDITORIAL COMMITTEE

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1. MANUFACTURING PRACTICES AND PRODUCT CLASSIFICATIONS

Tool steels are either carbon, alloy or high speed steels, capable of being hardened and tempered. They are usually melted in electric furnaces and produced under tool steel practice to meet special requirements. They may be used in certain hand tools or in mechanical fixtures for cutting, shaping, forming and blanking of materials at either ordinary or elevated temperatures. Tool steels are also used on a wide variety of other applications where resistance to wear, strength, toughness and other properties are selected for optimum performance.

For the purposes of this Manual, the foregoing description of tool steels is not intended to include those types of "mass produced steels" that are used in the manufacture of hollow drill steel, or of such products as mechanic's hand tools, hammers, picks, files, mining bits, mining cutters, large mill rolls and low alloy die blocks. Those exceptions are stated as a matter of guidance only and are not all-inclusive.

This Manual also does not deal with steels primarily intended for structural applications, nor does it include stainless steels, maraging steels or high temperature alloys.

Tool steels can be grouped into eight main categories:

1. Standard high speed tool steels
2. Intermediate high speed tool steels
3. Hot work tool steels
4. Cold work tool steels
5. Shock resisting tool steels
6. Mold steels
7. Special purpose tool steels
8. Water hardening tool steels

The commonly recognized identifications and types are listed in Table 1.

Tool steels are produced in the form of billets, hot and cold finished bars, special shapes, forgings, hollow bar, hot extrusions, hot rolled rod, wire, drill rod, plate, sheets, strip, tool bits, powder metal products and castings.

HOT FINISHED BARS AND COLD FINISHED BARS

Tool steels of the types listed in Table 1 are commonly produced in the form of bars. They can be furnished in a variety of cross sections, sizes, conditions and finishes. Bars may be individually forged, rolled or cut from plate. The methods of forging and rolling tool steels differ materially from those used with other steels. Some types can be initially hot worked only by forging. Bars commonly are forged or hot rolled from conditioned blooms or billets. (The terms blooms and billets refer to semifinished products that require further processing by some form of hot working. It is normal practice to process bars in straight lengths, although in some instances smaller sizes produced by rolling may be available in the form of coils.)

Following hot rolling or forging, bars may be subject (depending on the required condition and finish) to various operations, including: annealing or heat treating; cleaning by pickling, blast cleaning or other methods of descaling; hot or cold drawing, straightening, machining, rough grinding, centerless grinding or grinding and polishing.

Conditions and Surface Finishes. Tool steel bars are produced in the following conditions and with the following surface finishes. However, not all types can be furnished in all conditions and surface finishes.

Condition
1. Hot rolled or forged (natural)
2. Hot rolled or forged and annealed
3. Hot rolled or forged and heat treated
4. Cold or hot drawn (as drawn)
5. Cold or hot drawn and annealed
6. Cut from plate

Finish
(a) Hot rolled or forged finish (scale not removed)
(b) Pickled or blast cleaned
(c) Cold or hot drawn
(d) Turned or machined
(e) Rough ground
(f) Centerless ground or precision flat ground
(g) Polished (rounds only)

Bars commonly are furnished in the annealed condition as an aid to subsequent fabrication.

When a close tolerance or improved surface finish is required, bars may be drawn, turned or machined, rough ground, centerless ground or precision flat ground, or ground and polished. Cold drawing results in close tolerances and improved surface finish, but does not remove or lessen the amount of decarburization. Partial or complete removal of decarburization is effected by turning or machining, rough grinding, centerless grinding or precision flat grinding and grinding and polishing.

globular form. The preparation of metallographic specimens is described in ASTM E3, "Preparation of Metallographic Specimens," but the producer should be consulted for mutually agreeable standards of acceptance.

Magnetic Particle Inspection. This is a nondestructive method for detecting cracks, seams or other discontinuities at or near the surface in ferromagnetic materials. Very fine magnetic particles are applied to the surface of a bar or forging which has been suitably magnetized. The particles are attracted to regions of magnetic nonuniformity associated with surface imperfections and produce indications which may be observed visually. However, some indications may result from areas of structural nonuniformity which do not represent imperfections, and it is important that the producer be consulted for mutually acceptable standards.

A description of this inspection method using either dry powder or wet magnetic particle inspection is contained in ASTM E709, "Practice for Magnetic Particle Examination."

Other Tests. Tests covering fracture, hardenability, response to heat treatment and mechanical properties may also be made.

ROLLED, FORGED OR DRAWN SPECIAL SHAPES

Tool steels are sometimes produced to special shapes to eliminate loss of steel and save time in forging and machining operations. These products may be furnished in either the hot rolled or cold drawn finish and include numerous shapes such as single or double bevels, nail die shapes, scale pivot sections and half rounds.

FORGINGS

Forgings commonly are produced in all types of tool steels listed in Table 1 and in many shapes including rings, hobs, discs, blocks, sleeves, collared and shouldered shafts and intricate shapes. Initial forging is performed on flat dies and finishing may be done on flat or shaped dies. Die forgings commonly are produced in shaped dies which are used when quantities of the same shape forging are sufficient.

Tolerances and Allowances for Machining. Tolerances and allowances for machining for standard die forgings; rings and disc forgings are shown in Table 23, and are sufficient to allow for the removal of decarburization and surface imperfections.

Condition and Finish. Forgings are usually furnished in the annealed condition. The finish may be forged, pickled, blast cleaned or rough machined.

HOT EXTRUSIONS

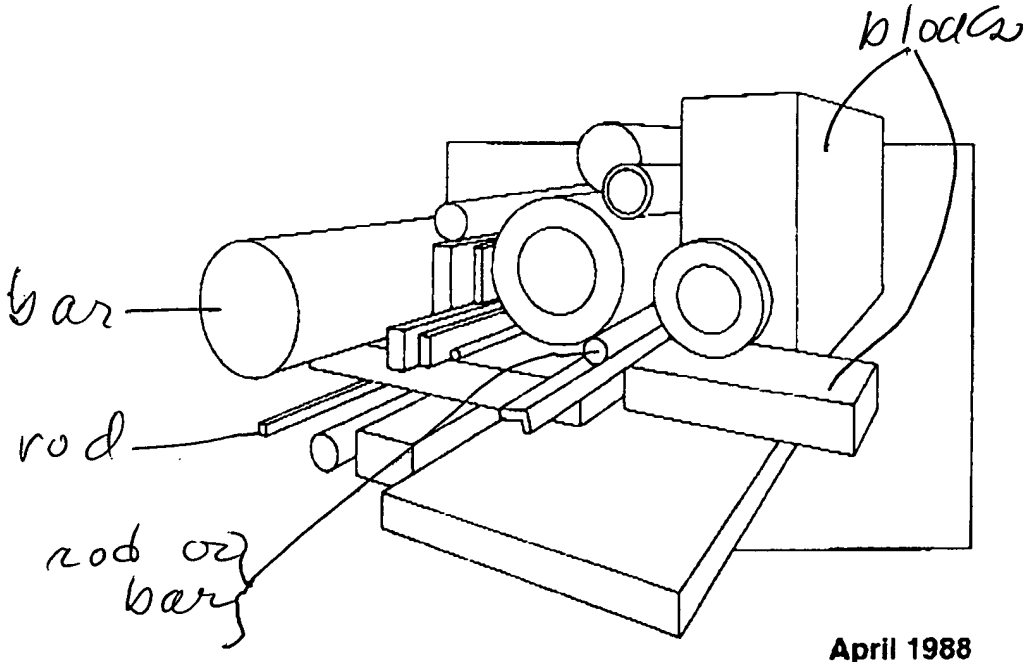
Tool steels can be hot extruded into tubing and special shapes to provide savings in machining time and reduced scrap loss because the resultant shape more closely approaches the dimensions of the finished tool or part. Hot extrusion involves heating of a billet to hot working temperature, followed by pushing through a die on an extrusion press (and over a mandrel if extruding a hollow section).

The high pressures and large amounts of area reduction involved, enable hot extrusion to provide improved microstructures in highly alloyed tool steels, i.e., more favorable carbide size and distribution along with less surface decarburization than often found in conventionally hot worked bars.

Most tool steel grades are extrudable in a wide range of tubular sizes and shapes.

STEEL PRODUCTS MANUAL

Tool Steels



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DECLARATION

The undersigned being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and that such willful false statements may jeopardize the validity of the application or any resulting registration, declares that he/she is properly authorized to execute this application on behalf of the applicant: he/she believes applicant to be entitled to use such mark in commerce; to the best of his/her knowledge and belief no other person, firm, corporation, or association has the right to use the above-identified mark in commerce, either in the identical form thereof or in such near resemblance thereto as to be likely, when used on or in connection with the goods/services of such other person, to cause confusion, or to cause mistake, or to deceive; and that all statements made of his/her own knowledge are true and all statements made on information and belief are believed to be true.

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